



Attorney Docket # 5367-183PUS

Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Franz EBERHARD et al.

Serial No.: 10/540,902

Filed: March 18, 2006

For: LASER DIODE BAR PROVIDED WITH A
PARALLEL CONNECTED DIODE FOR
BRIDGING SAID LASER DIODE BAR IN
CASE OF FAILURE

Examiner: Golub, Marcia A.

Group Art: 2828

Commissioner for Patents
Alexandria, VA 22313-1450

DECLARATION OF JOSIP MARIC UNDER 37 C.F.R. § 1.131

SIR:

I, Josip MARIC, do hereby declare and state as follows:

1. I reside at Von Henle Ring 5, 93161 Sinzing, Germany.
2. I am one of the co-inventors of the above-identified U.S. patent application (the "subject application"), which is U.S. national stage of International Patent Application PCT/DE03/03683 filed November 6, 2003 and claiming priorities to German patent applications 10261309.5 and 10306312.9 filed December 27, 2002 and February 14, 2003, respectively.

2.1. A copy of the executed Declaration filed in March 9, 2006 in the subject application is attached hereto as Exhibit A.

2.2. The priority claims were perfected upon applicants' submission of verified English translations of the German priority patent applications on April 10, 2008.

3. I have reviewed and understand the subject application, including the claims originally filed, and any and all claim amendments thereafter (the "Claimed Invention").

Conception

4. We conceived Claimed Invention prior to September 19, 2002 (the reference date of U.S. Patent 6,728,275 issued to Stephens), as evidenced by the Invention Disclosure and its appendices attached in Exhibit B.

4.1. The Invention Disclosure was completed on September 16, 2002, as is shown by the handwritten date in the upper right corner of the first page below the label "Datum der Ausfertigung" (*i.e.*, Date of Execution).

4.2. An English-language translation of the second page of the Invention Disclosure and the appendices is attached hereto as Exhibit C. The English-language translation shows that the Invention Disclosure and its appendices support the Claimed Invention.

Due Diligence

5. The Invention Disclosure was submitted to and received by the inventors' supervisor on September 16, 2002 as is shown by the handwritten date in the upper right column on the first page below the label "Eingang am" (*i.e.*, Received On).

6. The Invention Disclosure was reviewed and analyzed by the inventors' supervisor between September 16, 2002 to September 24, 2002.

7. On September 24, 2002, the Invention Disclosure was forwarded to and received by Dr. E. Nirschl, the IP Manager of OSRAM Opto Semiconductors GMBH ("OSRAM"), as is evident from Dr. Nirschl's receipt stamp in the lower right column on the first page of the Invention Disclosure.

8. Dr. Nirschl reviewed the Invention Disclosure from September 24, 2002 to September 27, 2002. On September 27, 2002, the Invention Disclosure was forwarded to and

received by the law firm of Epping Hermann Fischer in Munich, Germany ("EHF"). EHF's receipt stamp is shown at the bottom of the first page of the Invention Disclosure.

9. During the time period from September 27, 2002 to November 12, 2002, the attorneys at the law firm EHF studied the Invention Disclosure, evaluated the subject matter described in the Invention Disclosure, and prepared for and scheduled a patent evaluation meeting with the officials from OSRAM on November 12, 2002. EHF also prepared a declaration document for transferring the right to the invention to my employer, OSRAM, as required by German Patent Law (the "declaration document") and forwarded the declaration document to me on October 29, 2002.

10. On November 12, 2002, the patent committee meeting was held and attended by the following personnel:

- Dr. Ernst Nirschl (IP Manager of OSRAM);
- Dr. Karsten Diekmann (Division Manager);
- Dr. Dieter Eißler (Division Manager);
- Dr. Volker Härle (Division Manager);
- Johann Luft (Division Manager);
- Dr. Klaus Streubel (Division Manager);
- Günter Waitl (Division Manager);
- Dr. Michael Schwind (Division Manager and co-inventor); and
- Richard Schachtner (Patent Attorney of EHF).

During the meeting, the attendees discussed and decided to proceed filing a German patent application for the subject matter described in the Invention Disclosure.

11. During the time period from November 12, 2002 to December 27, 2002, the law firm of EHF worked reasonably hard in drafting a new patent application covering the subject matter disclosed in the Invention Disclosure.

12. On November 14, 2002, I signed the declaration document for transferring the right to the invention and returned the signed declaration document for transferring the right to the invention to the law firm of EHF.

13. EHF subsequently filed German patent application 10261309.5 on December 27, 2002, to which the international phase of the subject application claims priority.

14. On February 14, 2003, EHF filed German patent application 10306312.9, to which the international phase of the subject application claims priority.

15. As is clear from the foregoing, the Claimed Invention was conceived of prior to the September 19, 2002 reference date of U.S. Patent 6,728,275 issued to Stephens. Applicants and those involved in preparing and filing the subject application on applicants' behalves, have exhibited due diligence from September 16, 2002 up to the filing date of the German priority applications on December 27, 2002 and February 14, 2003, respectively.

16. I declare that all statements made herein of my own knowledge are true; that all statements made herein on information and belief to be true; and further that these statements were made with the knowledge that willful, false statements and the like are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful statements may jeopardize the validity of this patent application and any patent resulting therefrom.

Date: September 22, 2008

By: Josip Maric
Josip MARIC

Exhibit A

Declaration for Patent Application

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
(Includes Reference to PCT International Applications)

Attorney's Docket No.
5367-183PUS

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**LASER DIODE BAR PROVIDED WITH A PARALLEL CONNECTED DIODE FOR BRIDGING SAID
LASER DIODE BAR IN CASE OF FAILURE**

the specification of which (check only one item below)

☐ is attached hereto

☒ was filed as United States application

Serial No. 10/540,902

on June 27, 2005

and was amended

on _ (if applicable).

☐ was filed as PCT international application

Number PCT/DE03/03683

on November 6, 2003

and was amended under PCT Article 19

on _ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN/PCT APPLICATIONS AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

Country (if PCT, indicate "PCT")	Application Number	Date of Filing (day, month, year)	Priority Claimed Under 35 U.S.C. 119	
Germany	10261309.5	27 December 2002	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
PCT	PCT/DE03/03683	6 November 2003	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
Germany	10306312.9	14 February 2003	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (Includes Reference to PCT International Applications)				Attorney's Docket No. 5367-183PUS	
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) at <i>Cohen, Pontani, Lieberman & Pavane</i> to prosecute this application and transact all business in the Patent and Trademark Office connected therewith <p style="text-align: center;">Customer number 27799</p>					
Send correspondence to <i>Cohen, Pontani, Lieberman & Pavane</i> at the address for the following customer Number: 27799				Direct Telephone calls to: (name and telephone number) Thomas Langer (212) 687-2770	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.					
2 0 1	FULL NAME OF INVENTOR	FAMILY NAME EBERHARD	FIRST GIVEN NAME Franz	SECOND GIVEN NAME	
	RESIDENCE, CITIZENSHIP	CITY Regensburg	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Germany	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Flösserstr. 6	CITY Regensburg	STATE & ZIP CODE/COUNTRY 93059 Germany	
2 0 2	FULL NAME OF INVENTOR	FAMILY NAME HERRMANN	FIRST GIVEN NAME Gerhard	SECOND GIVEN NAME	
	RESIDENCE, CITIZENSHIP	CITY Bernhardswald	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Germany	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Sudetenstrasse 20	CITY Bernhardswald	STATE & ZIP CODE/COUNTRY 93170 Germany	
2 0 3	FULL NAME OF INVENTOR	FAMILY NAME MARIC	FIRST GIVEN NAME Josip	SECOND GIVEN NAME	
	RESIDENCE, CITIZENSHIP	CITY Regensburg	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Croatia	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Hermann-Köhl-Strasse 6a	CITY Regensburg	STATE & ZIP CODE/COUNTRY 93049 Germany	
2 0 4	FULL NAME OF INVENTOR	FAMILY NAME SCHWIND	FIRST GIVEN NAME Michael	SECOND GIVEN NAME	
	RESIDENCE, CITIZENSHIP	CITY Sinzing	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Germany	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Heckenweg 12	CITY Sinzing	STATE & ZIP CODE/COUNTRY 93161 Germany	
2 0 5	FULL NAME OF INVENTOR	FAMILY NAME BEHRINGER	FIRST GIVEN NAME Martin	SECOND GIVEN NAME	
	RESIDENCE, CITIZENSHIP	CITY Regensburg	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Germany	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Theodor-Storm-Strasse 16 a	CITY Regensburg	STATE & ZIP CODE/COUNTRY 93051 Germany	

2 0 6	FULL NAME OF INVENTOR	FAMILY NAME BEHRES	FIRST GIVEN NAME Alexander	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY Kelheim	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Germany
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Waldhofstr. 3c	CITY Kelheim	STATE & ZIP CODE/COUNTRY 93309 Germany

SIGNATURE OF INVENTOR 201 <i>Frank Alberhard</i>	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE 13 February 2006	DATE	DATE
SIGNATURE OF INVENTOR 204	SIGNATURE OF INVENTOR 205	SIGNATURE OF INVENTOR 206
DATE	DATE	DATE
Additional inventor(s) name(s) & address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

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SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202 <i>Gerdhard Behres</i>	SIGNATURE OF INVENTOR 203
DATE	DATE <i>February 19. / 2006</i>	DATE
SIGNATURE OF INVENTOR 204	SIGNATURE OF INVENTOR 205	SIGNATURE OF INVENTOR 206
DATE	DATE	DATE
Additional inventor(s) name(s) & address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

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SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE	DATE	DATE
SIGNATURE OF INVENTOR 204	SIGNATURE OF INVENTOR 205	SIGNATURE OF INVENTOR 206 <i>Alexander Behres</i>
DATE	DATE	DATE <i>February 13, 2006</i>
Additional inventor(s) name(s) & address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

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I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

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			<input type="checkbox"/> YES	<input type="checkbox"/> NO
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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) at *Cohen, Pontani, Lieberman & Pavane* to prosecute this application and transact all business in the Patent and Trademark Office connected therewith

Customer number 27799

Send correspondence to *Cohen, Pontani, Lieberman & Pavane* at the address for the following customer Number: **27799**

Direct Telephone calls to:
(name and telephone number)
Thomas Langer
(212) 687-2770

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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	RESIDENCE, CITIZENSHIP	CITY Regensburg Sinzing	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Croatia
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Hermann-Kohl-Strasse 6a Von Hehle Ring 5	CITY Regensburg Sinzing	STATE & ZIP CODE/COUNTRY 93049 Germany 93161
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	POST OFFICE ADDRESS	POST OFFICE ADDRESS Theodor-Storm-Strasse 16 a	CITY Regensburg	STATE & ZIP CODE/COUNTRY 93051 Germany

JM
February
8th 2006

2 0 6	FULL NAME OF INVENTOR	FAMILY NAME BEHRES	FIRST GIVEN NAME Alexander	SECOND GIVEN NAME
	RESIDENCE, CITIZENSHIP	CITY Kelheim	STATE OR FOREIGN COUNTRY Germany	COUNTRY OF CITIZENSHIP Germany
	POST OFFICE ADDRESS	POST OFFICE ADDRESS Waldhofstr. 3c	CITY Kelheim	STATE & ZIP CODE/COUNTRY 93309 Germany

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203 <i>Janic Jorip</i>
DATE	DATE	DATE <i>February 8th 2006</i>
SIGNATURE OF INVENTOR 204 <i>Michael Elwood</i>	SIGNATURE OF INVENTOR 205 <i>Martin Sebrup</i>	SIGNATURE OF INVENTOR 206
DATE <i>February 8th 2006</i>	DATE <i>February 9th 2006</i>	DATE
Additional inventor(s) name(s) & address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

Exhibit B

Invention Disclosure

Vertraulich!**ERFINDUNGSMELDUNG**

Bitte verschlossen weitersenden!

Aktenzeichen:

An
OSRAM-OS

Ich / Wir (Vor- und Nachname des / der Erfinder(s) – weitere Angaben und Unterschrift(en) auf die letzte Seite)

Martin Behringer, Gerhard Herrmann, Franz Eberhard, Josip Maric, Michael
Schwind, Alexander BehresDatum der
Ausfertigung:

16.09.02

melde(n) hiermit die auf den folgenden Seiten vollständig beschriebene Erfindung mit der
Bezeichnung:Parallelschaltungs-sicherung von Hochleistungsdiodelenlaserbarren/modulen und Wege, zu deren
Realisierung und Montage.**I. An Vorgesetzten des / der Erfinder(s)**Herrn / Frau Hr. Luft

OS SE 3

(Org/Einheit)

mit der Bitte, die nachstehenden Fragen zu beantworten:

- a) Wann ging die Erfindungsmeldung bei Ihnen ein? _____
- b) Geht die Erfindung auf öffentlich geförderte Arbeiten zurück? _____

☒ nein☐ ja, Projekt (Vorhaben): _____

c) Gibt es ein zugehöriges internes FuE-Projekt? Name: _____

d) Zur Entscheidung bzw. Empfehlung über Inanspruchnahme (Zutreffendes bitte ankreuzen!):

☒ Die Erfindung sollte unbeschränkt in Anspruch genommen werden.☐ Die Erfindung kommt für eine Behandlung als Betriebsgeheimnis in Betracht.☐ Die Erfindung kommt evtl. für Auslandsanmeldungen in Betracht.
Länder: _____☐ Die Erfindung wird voraussichtlich nicht benutzt.
Bei Freigabe wäre aber ein Benutzungsrecht wünschenswert.☐ Die Erfindung kann dem / der Erfinder(n) vorbehaltlos freigegeben werden.☐ Die Erfindung betrifft nicht unser Interessengebiet. Es sind noch folgende

Dienststellen zu befragen:

17.9.02

(Datum)

(Unterschrift des Vorgesetzten)

Bitte wegen gesetzlicher Frist sofort weiterleiten an Osram OS IM!

II.An OSRAM OS IM, Dr. Nirschl, Rbg W
zur weiteren VeranlassungKopie an OSRAM PAT
Original an Kanzlei EppingEINGANG
Erfindung Hermann & Fischer

27. Sep. 2002

Eingang

27. Sep. 2002

E. Nirschl

Dtd. Nr.

764

Ansprech-
partner:

0578

Schwind

1. Welches technische Problem soll durch Ihre Erfindung gelöst werden?

Beim Ausfall eines Hochleistungsdiodenlaserbarrens kann es zur Unterbrechung des Stromkreises kommen. Bei serieller Anordnung mehrerer Module kommt es somit zum Ausfall aller Module des gleichen Stromkreises.

2. Wie wurde dieses Problem bisher gelöst?

Weltweiter Stand der Technik mit konkreter Angabe der Fundstelle oder Kopie der Unterlagen (Literatur, Patentschriften, Prospekte, Datenblätter)

Das Gerät mit dem ausgefallenen Laser wurde komplett ausgetauscht, sobald ein Laser ausgefallen war.

3. In welcher Weise löst Ihre Erfindung das angegebene technische Problem? (geben Sie Vorteile an)

Die Erfindung sieht vor, ein Halbleiterbauelement (oder ein mechanisches Element) so parallel zum Diodenlaser zu schalten, dass beim Ausfall des Lasers der Strom über das parallelgeschaltete Element fließen kann und somit die anderen Module des gleichen Stromkreises nach wie vor mit Strom versorgt werden.

4. Worin liegt der erfinderische Schritt?

Der erfinderische Schritt liegt in der Parallelschaltung eines Überbrücker-Bauelementes. Weiterhin liegt ein zweiter erfinderische Schritt darin, beide Bauelemente nicht in der gleichen, Weichlot verwendenden Technologie zu montieren, sondern das Überbrückerbauelement mittels Hartlot (oder einem Lot mit einem höheren Schmelzpunkt) bei wesentlich höherer Temperatur auf der Wärmesenke aufzubauen.

5 Ausführungsbeispiel(e) der Erfindung.

Gedacht wird an eine Wärmesenke (standard, wie sie zur Montage von Halbleiterdiodenlaserbarren verwendet wird), auf die im vorderen Bereich ein Halbleiterdiodenlaserbarren (oder Chip) aufgebracht wird. Auf die gleiche Wärmesenke wird etwas weiter hinten ein 2te Diode aus z.B. AlGaAs aufgebracht. Diese 2te Diode wird zum Diodenlaserbarren parallel verschaltet und sollte eine Einsatzspannung aufweisen, die etwa 200 mV (oder mehr) höher ist als die des Diodenlasers. Fällt nun der Laser aus und lässt keinen Stromfluss mehr zu, steigt die Spannung zwischen Kathode (Wärmesenke) und Anode (Deckellötung) stark an bis die Paralleldiode "aufmacht" und den Stromfluss wieder zulässt (siehe auch Skizze).

Bei der Montage zweier Bauelement auf die gleiche Wärmesenke müssen entweder beide Bauelement gleichzeitig abgelegt werden, oder das Bauelement, das zuerst montiert wurde, kann sich wieder lösen, wenn das 2te Bauelement aufgelötet wird. Um das zu vermeiden sollte die Paralleldiode zunächst mit einem Hartlot (z.B.) AuSn auf der Wärmesenke montiert werden. Danach kann man die Wärmesenke mit Indium bedampfen und für die Montage der Laserdioden vorbereiten. Die Montage der Laserdioden kann dann in gewohnter Art und Weise erfolgen. Da die Indium Lötung bei wesentlich niedrigerer Temperatur erfolgt als die Hartlotlötung besteht nicht das Risiko, dass die Verbindung zwischen Wärmesenke und Paralleldiode wieder aufgeht.

Alternativ zur AlGaAs Paralleldiode sind weitere Varianten zu denken, die im Anhang aufgezählt sind.

6. Zur weiteren Erläuterung sind als Anlagen beigefügt:

Blatt der Darstellung eines oder mehrerer Ausführungsbeispiele der Erfindung;
Blatt zusätzliche Beschreibungen (z. B. Laborberichte, Versuchsprotokolle);
Blatt sonstige Unterlagen;

7. Wurde die Erfindung bereits erprobt (Durchführung von Versuchen, Anfertigung von Mustern)?
☐ nein ☐ ja, Ergebnis: _____
8. Für welche Erzeugnisse ist die Erfindung anwendbar? _____
9. Ist die Anwendung der Erfindung vorgesehen?
☐ nein ☐ ja, bei: _____
10. Ist ein auf der Erfindung beruhendes Erzeugnis geliefert oder ist eine Lieferung beabsichtigt?
☐ nein ☐ ja, (voraussichtlich) am _____ ; Bezeichnung des Erzeugnisses: _____
11. Ist eine Veröffentlichung der Erfindung beabsichtigt oder bereits erfolgt?
☐ nein ☐ ja, (voraussichtlich) am _____ in Buch, Zeitschrift: _____
12. Ist eine Mitteilung der Erfindung an Firmenfremde beabsichtigt oder bereits erfolgt?
☐ nein ☐ ja, (voraussichtlich) am _____ an _____
13. Es wird gebeten, soweit möglich, folgende Kriterien abzuschätzen:
- a) Umgehungsschwierigkeit für Wettbewerber:
Gleichwertige Alternativen
☐ praktisch nicht realisierbar
☐ erfordern Aufwand
☐ problemlos realisierbar
- b) Benutzungsattraktivität für Wettbewerber
Wettbewerberinteresse
☐ überragend
☐ durchschnittlich
☐ minimal
- c) Nachweis einer Wettbewerbernutzung
Benutzungsnachweis
☐ problemlos möglich
☐ aufwendig
☐ praktisch unmöglich
- d) Benutzung im Hause
☐ (voraussichtlich) ja
☐ offen
☐ unwahrscheinlich

14. Angaben zur Person des/der Erfinder(s) (Erfinder 1 - 4 hier eintragen. Für weitere Erfinder bitte Zusatzblatt beifügen):

Name	Behringer	Herrmann	Behres	Eberhard
Vorname	Martin	Gerhard	Alexander	Frank
Akad. Grad	Dr. rer. nat.		Dr. Ing.	
Dienstanschrift Mit Standort	Wernerwerkstr. 2 93049 Regensburg	s.l.	s.l.	s.l.
Tätigkeit/Stellung im Betrieb (z.B. Laborleiter u.ä.)	Chipentwicklung	Rel. RM	Epitaxie	Fertw. Ing.
Hausanruf/Fax	0941 850 1077	2361	1273	2887
Staatsangehörigkeit	deutsch	dt	deutsch	deutsch
Postleitzahl, Wohnort	93051 Regensburg	93170 Bertholdswald	93309 Kelheim	93059 Regensburg
Straße, Hausnr.	Theodor-Storm- Str. 10	Sudhoffsstr. 20	Waldhofstr. 3c	Feinperstr. 6
Geburtsdatum	03.11.1967	26.5.54	06.09.68	25.10.68
Abrechnende Pers. OrgEinheit Oder APD-Nr. *				
Personalnummer *	000618776	00618630	00618436	00618369
13. Liegt die Erfindung auf a) Ihrem Arbeitsgebiet? b) einem anderen Arbeitsgebiet Ihres Arbeitgebers?	ja <input type="checkbox"/> nein <input checked="" type="checkbox"/> ja <input checked="" type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input checked="" type="checkbox"/> ja <input checked="" type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input checked="" type="checkbox"/> ja <input checked="" type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input checked="" type="checkbox"/> ja <input checked="" type="checkbox"/> nein <input type="checkbox"/>
14. Welchen Anteil an der Erfindung haben Sie?	17 %	17 %	17 %	17 %
15. Wurde oder wird die Erfindung auch als VV gemeldet?	ja <input type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/>
16. Falls Sie die Erfindung als freie Erfindung ansehen, bitte begründen:				
17. Meines/unseres Wissens sind keine weiteren Personen an der Erfindung beteiligt.	Martin Behring	G. Herrmann	A. Behres	Frank Eberhard
	Unterschrift	Unterschrift	Unterschrift	Unterschrift

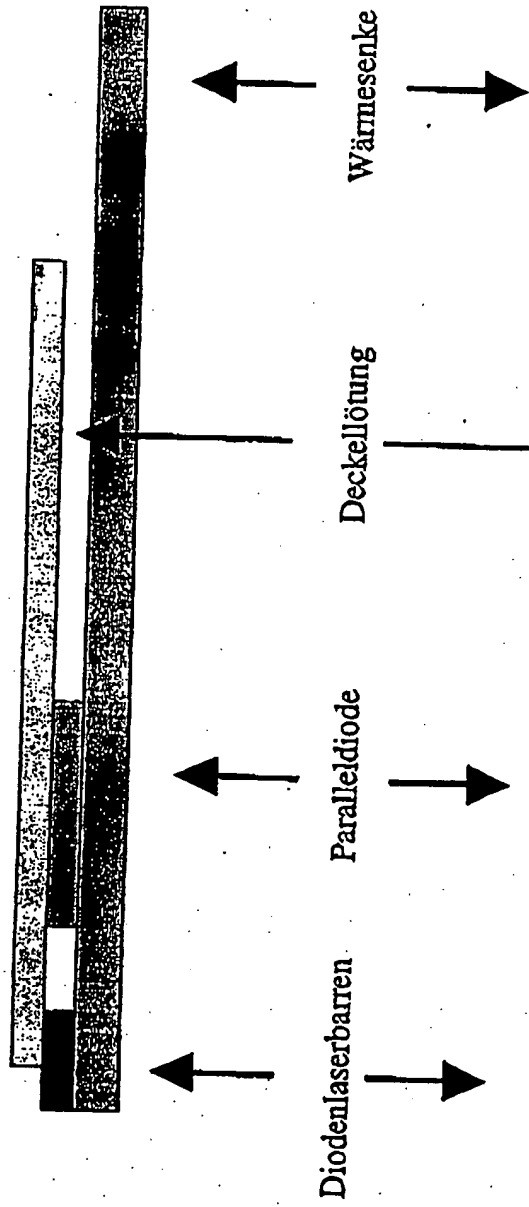
* Bitte aus Firmenausweis oder Gehaltsabrechnung entnehmen

14. Angaben zur Person des/der Erfinder(s) (Erfinder 1 - 4 hier eintragen. Für weitere Erfinder bitte Zusatzblatt beifügen):

Name	Maric	Schwind		
Vorname	Josip	Michael		
Akad. Grad	Wernerwerkstr. 2 93049 Regensburg	Dr.-Ing		
Dienstanschrift Mit Standort	Wernerwerkstr. 2 93049 Regensburg	S. l.		
Tätigkeit/Stellung im Betrieb (z. B. Laborvorsteher u. a.)	Anwendungstechnik			
Hausanruf/Fax	3335	189/3335		
Staatsangehörigkeit	Kroatische	deutsch		
Postleitzahl, Wohnort	93049 Regensb.	93161 Sinzing		
Straße, Hausnr.	Freiherr von Stein Nr. 4	Reckenweg 12		
Geburtsdatum	27.03.1969.	30.08.63		
Abrechnende Pers. Org./Einheit Oder APD-Nr. *				
Personalnummer *	00618494	00618726		
13. Liegt die Erfindung auf a) Ihrem Arbeitsgebiet? b) einem anderen Arbeitsgebiet Ihres Arbeitgebers?	ja <input type="checkbox"/> nein <input checked="" type="checkbox"/> ja <input checked="" type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input checked="" type="checkbox"/> ja <input checked="" type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/> ja <input type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/> ja <input type="checkbox"/> nein <input type="checkbox"/>
14. Welchen Anteil an der Erfindung haben Sie?	17 %	17 %	%	%
15. Wurde oder wird die Erfindung auch als VV gemeldet?	ja <input type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/>	ja <input type="checkbox"/> nein <input type="checkbox"/>
16. Falls Sie die Erfindung als freie Erfindung ansehen, bitte begründen:				
17. Meines/unseres Wissens sind keine weiteren Personen an der Erfindung beteiligt.	Janis Josip	M. Schwind		
	Unterschrift	Unterschrift	Unterschrift	Unterschrift

* Bitte aus Firmenausweis oder Gehaltsabrechnung entnehmen

Seitenansicht:



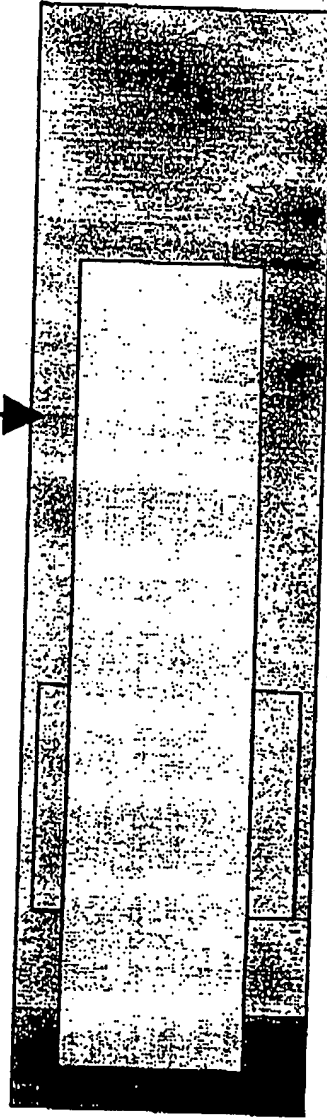
Diodenlaserbarren

Paralleldiode

Deckellötung

Wärmesenke

Draufsicht:



Integrierte Lösungen



Vorteil: klein und integrierbar
Nachteil: Montage wird schwieriger

Vorschläge: a.) Zenerdiode
b.) Triac überkopf
c.) Diode AlGaAs
d.) 3 Si dioden
e.) Schalter/Sicherung
Überspannungsableiter
Feder auf Lotkugel?
Bimetallschalter

Nummer	Name	Vorteile	Nachteile	Bewertung
1	Zenerdiode	Keine Transienten	Chipgröße 6x6 oder größer höhere Spannung als der Laser hohe Temperaturbelastung keine optische Kühlung	Sonderanfertigung ?
2	Triac überkopf	kleinere Spannung	Transienten möglich hohe Belastung für Quelle und Nachbardiode bei Jedem Puls	Sonderanfertigung ?
3	Diode AlGaAs $U_0 > 1,8 \text{ V}$	in haus Einfach schnell kompatibel zum Barren (gleiche Dicke, und Metall) Visualisierung	höhere Spannung als der Laser hohe Temperaturbelastung keine optische Kühlung	pn-Übergang parallel p-n-Selten Verwechslung beachten
4	3 Si dioden	möglicherweise billiger	mehrschichtiger Klärungsbedarf mit IFX	
5	Schalter/Sicherung Überspannungsableiter Feder auf Lotkugel? Bimetallschalter		Klärungsbedarf mit IFX Klärungsbedarf mit Epcos	

Diskrete Lösungen:



Vorteil:

intelligente Schaltung
kleine Verlustleistung
Zustand des Lasers jederzeit erkennbar auch
per Fernabfrage
Multiplexlösung denkbar

Nachteil:

viele Teile
hoch komplexer, grosser Aufbau
grosser Aufwand
nicht kompatibel zu bestehenden Systemen
Entwicklung nötig
Anschlusseleitungen nach aussen führen

Nummer	Name	Vorteile	Nachteile	Bewertung
1	Fet-Technologie Sip-MOS CoolMOS	intelligente Schaltung kleine Verlustleistung Zustand des Lasers jederzeit erkennbar auch per Fernabfrage	viele Teile hoch komplex grosser Aufbau grosser Aufwand nicht kompatibel zu bestehenden Systemen Entwicklung nötig	Neuentwicklung
2	Triac	siehe oben andere Ansteuerung		
3	Thyristor			
4	Bipolar-Transistor			
5	Relais			
6	Manueller Schalter	extrem simpel		

1-4 auch als Teil-integrierte Lösung denkbar. Die Anschlusseleitungen müssen nach aussen geführt werden.

Exhibit C

English Translation of Partial Invention Disclosure

1. What technical problem is intended to be solved by your invention?

When a high-power diode laser bar fails, interruption of the electric circuit can occur. In the case where a plurality of modules are arranged in series, therefore, failure of all the modules in the same electric circuit occurs.

2. How has this problem been solved to date?
Worldwide prior art with concrete indication of citation or copy of the documents
(literature, patent specifications, brochures, data sheets)

The device with the failed laser has been completely exchanged as soon as a laser has failed.

3. In what way does your invention solve the technical problem specified? (Indicate advantages)

The invention provides for connecting a semiconductor component (or a mechanical element) in parallel with the diode laser such that, in the event of failure of the laser, the current can flow via the parallel-connected element and, consequently, the other modules of the same electric circuit are still supplied with current.

4. What does the inventive step consist in?

The inventive step consists in the parallel connection of a bridging component. Furthermore, a second inventive step consists in the two components not being mounted by means of the same technology using soft solder, rather the bridging component being constructed on the heat sink by means of hard solder (or a solder having a higher melting point) at a significantly higher temperature.

5. Exemplary embodiment(s) of the invention

What is conceived of is a heat sink (standard, as used for mounting semiconductor diode laser bars) to which a semiconductor diode laser bar (or chip) is applied in the front region. A second diode composed of e.g. AlGaAs is applied to the same heat sink somewhat further back. Said second diode is connected up in parallel with the diode laser bar and should have a threshold voltage that is approximately 200 mV (or more) higher than that of the diode laser. If the laser then fails and no longer permits a current flow, the voltage between cathode (heat sink) and anode (cover soldering) rises greatly until the parallel diode "turns on" and permits the current flow again (also see schematic diagram).

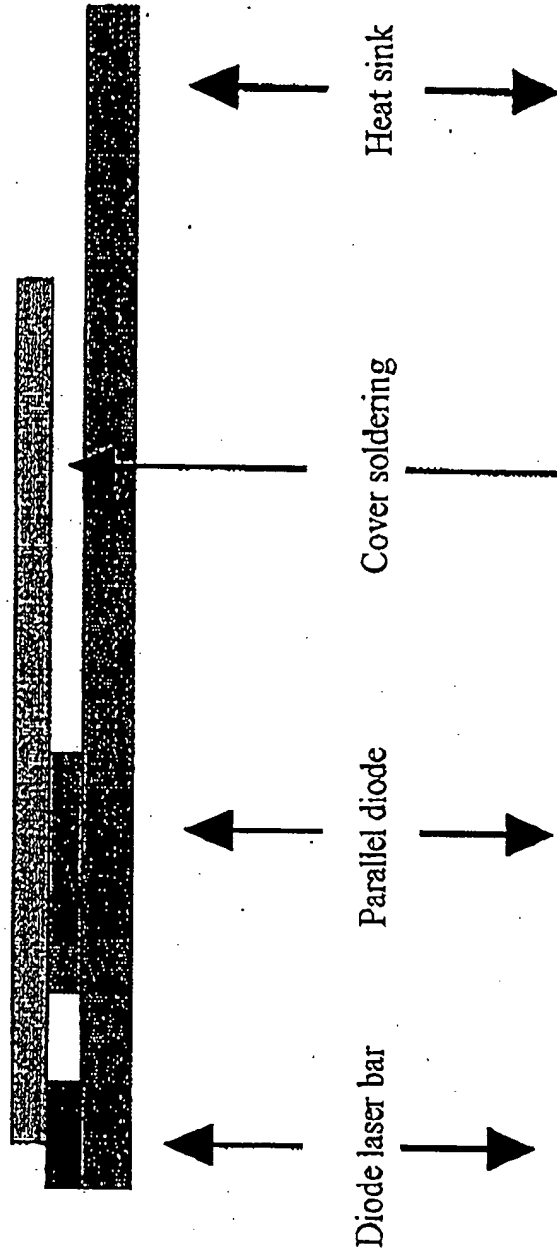
When two components are mounted onto the same heat sink, either both components have to be placed thereon simultaneously or the component that was mounted first can be detached again when the second component is soldered on. In order to avoid this, the parallel diode should firstly be mounted on the heat sink by means of a hard solder (e.g. AuSn). Afterwards, the heat sink can have indium vapour-deposited on it and be prepared for the mounting of the laser diode. The laser diode can then be mounted in a customary manner. Since the indium soldering is effected at a significantly lower temperature than the hard-solder soldering, there is no risk of the connection between heat sink and parallel diode becoming undone again.

As an alternative to the AlGaAs parallel diode, further variants are conceivable which are enumerated in the appendix.

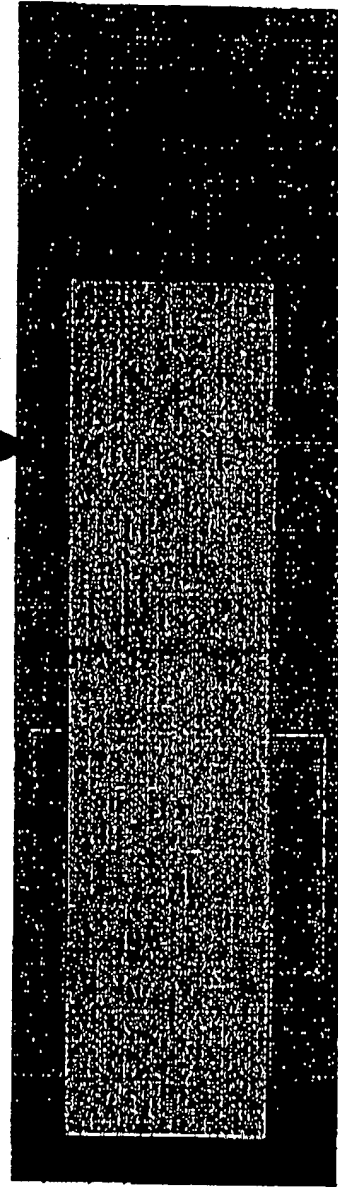
6. For further elucidation the following are enclosed as appendices:

- Sheet of the illustration of one or more exemplary embodiments of the invention;
- Sheet of additional descriptions (e.g. laboratory reports, test records);
- Sheet of other documentation;

Side view:



Plan view:



Integrated solutions:

Advantage: small and integrable

Disadvantage: mounting becomes more difficult

Proposals:

- a.) zener diode
 - b.) triac breaker
 - c.) diode AlGaAs
 - d.) 3 Si diodes
 - e.) switch/fuze
 - surge arrester
 - spring on solder ball?
 - bimetallic switch
-

Number	Name	Advantages	Disadvantages	Assessment
1	Zener diode	No transients	Chip size 6 x 6 or larger Higher voltage than the laser High temperature loading No optical cooling	Special production?
2	Triac breakover	Lower voltage	Transients possible High loading for source and adjacent diodes for each pulse	Special production?
3	Diode AlGaAs $U_0 > 1.8 \text{ V}$	In house Simple Fast Compatible with bar (identical thickness, and metal) visualization	Higher voltage than the laser High temperature loading No optical cooling	pn junction parallel take account of confusion of p-n sides
4	3 Si diodes	Possibly less expensive	Multilayered Need for clarification with IFX	
5	Switch/fuze Surge arrester Spring on solder ball? Bimetallic switch		Need for clarification with IFX Need for clarification with Epcos	

Discrete solutions:

Advantage:

intelligent circuit
low power loss
state of the laser discernible at any time
including by remote interrogation
multiplex solution conceivable

Disadvantage:

many parts
highly complex and large construction
high outlay
not compatible with existing systems
development necessary
connecting lines routed towards the
outside

Number	Name	Advantages	Disadvantages	Assessment
1	Fet Technologie Sip-MOS CoolMOS	Intelligent circuit Low power loss State of the laser discernible at any time including by remote interrogation	Many parts Highly complex Large construction High outlay Not compatible with existing systems Development necessary	New development
2	Triac	See above Different driving		
3	Thyristor			
4	Bipolar transistor			
5	Relay			
6	Manual switch	Extremely simple		

1-4 also conceivable as partly integrated solution. The connecting lines have to be routed towards the outside.